PATENT **99RE067/ALBRP138US**

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Date: 3.10.05

Kelly M. Jenkins

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of:	
Applicant(s): Frederick M. Discenzo	Examiner: Hwa S. Lee
Serial No: 09/406,368	Art Unit: 2877
Filing Date: September 28, 1999	

Title: SYSTEM AND METHOD FOR OPTICAL VIBRATION SENSING

Mail Stop Appeal Brief – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REPLY BRIEF

Dear Sir:

Applicant's representative submits this Reply Brief in response to the Examiner's Answer dated January 11, 2005. A Request for Oral Hearing and a credit card payment form are filed concurrently herewith, wherein the credit card payment form is believed to cover all fees due regarding this document and the Request for Oral Hearing. In the event any additional fees may be due and/or are not covered by the credit card, the Commissioner is authorized to charge such fees to Deposit Account No. 50-1063 [ALBRP138US]. 03/11/2005 BBONNER 00000023 09406368

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REMARKS

Claims 8-11 and 33-51 are currently pending in the subject application. Claims 8-11 have been allowed. Claims 39 and 40 have been objected to by the Examiner. Claims 33-38 and 41-51 are presently under consideration. Favorable reconsideration of the subject patent application is respectfully requested in view of the comments herein. In particular, the following comments address deficiencies contended in the Examiner's Answer to applicant's Appeal Brief.

I. Rejection of Claims 33-38 Under 35 U.S.C. §103(a)

Claims 33-38 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Udd *et al.* (US 4,471,659). It is respectfully submitted that this rejection be withdrawn for at least the reasons set forth below as well as in applicant's Appeal Brief. Udd *et al.* does not teach or suggest all limitations of applicant's claimed invention.

> To reject claims in an application under §103, an examiner must establish a *prima facie* case of obviousness. A *prima facie* case of obviousness is established by a showing of three basic criteria. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *See* MPEP §706.02(j). The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *See In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

The subject invention as recited in claims 33-38 (and claim 41) relates to a system for obtaining vibration data from vibrating structures for diagnosis and further analysis. In particular, an optical sensing system acquires vibration data to diagnose the state of a structure subject to vibrational forces. As recited in independent claim 33, the system comprises ***an obscuring body that based on a particular vibration state of a machine obscures a portion of light transmitted from a source to a light receiver, and a processor that analyzes an amount of light received by the light receiver to determine the particular vibration state.*** The obscuring

body obscures a portion of light as illustrated, for example, in figures 3b-3d and 4b-4d. As movement occurs, the amount of light received by the light receiver changes and this amount of light is used to determine the particular vibration state. Udd, *et al.* does not teach or suggest such features.

Udd, *et al.* discloses two output signals (92 and 94) that correspond to the sine and cosine of a phase position of a grating which produce a continuous output signal that does not fade as the sine and cosine of the phase position goes through zero because it does not occur at the same time. (*See e.g.*, col. 3, lns. 25-33). Udd, *et al.* does not teach or suggest either obscuring a portion of light transmitted or analyzing an amount of light received at a light receiver but instead is using the sine and cosine of the phase position of the grating to determine "the instantaneous relative position of the grating." (*See e.g.*, col. 3, lns. 33-37).

In the Examiner's Answer it is asserted Udd, *et al.* teaches "a suitable electronic processing means is used for quadrature detection ... and that with quadrature detection, a wide range of vibration frequencies and amplitude is determined" rendering it obvious that the processor that determines quadrature also determines a particular vibration state such as frequency and amplitude. Applicant's representative disagrees. Udd, *et al.* does not teach or even suggest "that with quadrature detection, a wide range of vibration frequencies and amplitude is determined." Rather Udd, *et al.* merely discloses how to obtain two signals, 90 degrees out of phase, to apply quadrature detection to detect vibration over a wide range of frequencies and amplitudes. (*See e.g.*, Abstract). Udd, *et al.* does not disclose or even suggest that the use of quadrature would allow frequencies and amplitude to be determined. Nor would it have been obvious to one having skill in the art to modify the teachings of Udd, *et al.* to render the claimed invention.

As Udd, *et al.* fails to disclose, teach, or suggest all limitations as recited in the subject claims, it is readily apparent that the assertions in the Examiner's Answer are incorrect and this rejection should be withdrawn. In view of at least the foregoing, the subject claims are in condition for allowance and it is respectfully requested that the rejection of independent claim 33 (and the claims that depend there from) be withdrawn.

II. **Rejection of Claims 41-51 Under 35 U.S.C. §103(a)**

Claims 41-51 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Udd *et al.* It is respectfully submitted that this rejection be withdrawn for at least the reasons set forth below as well as in applicant's Appeal Brief.

Independent claim 42 recites *a system that senses a vibration level for a machine, comprising ... an obscuring body that obscures a light directed upon the light receiving arrangement* ***to cast a shadow fringe thereupon at a particular vibration level of a machine, the remaining light illuminates part or all of a light receiving arrangement as a function of the particular vibration level, and a processor that analyzes the remaining light to determine the particular vibration level of the machine.*** Independent claims 49 and 51 recite similar limitations. Udd, *et al.* does not teach or suggest such features.

Udd, *et al.* discloses a grating having finely spaced opaque and transparent strips that create a beam having a pattern of dark and light strips. (*See e.g.*, col. 3, lns. 5-10). These light and dark patterns are ninety degrees out of phase with each other and represent the sine and cosine relationship of two signals. (*See e.g.*, col. 3, lns. 10-23). The light and dark strips are not a shadow fringe where the remaining light illuminates part or all of a light receiving arrangement as a function of the particular vibration level. Rather, Udd, *et al.* requires these two signals for quadrature detection. Additionally, as discussed *supra*, Udd, *et al.* does not teach or suggest a processor that analyzes the *remaining light* to determine the particular vibration level of the machine. Rather Udd, *et al.* discloses quadrature detection which utilizes two output signals that correspond to the sine and cosine of a phase position of a grating to determine the instantaneous relative position of the grating. (*See e.g.*, col. 3, lns. 26-37). Thus, Udd, *et al.* is not analyzing the remaining light but rather the sine and cosine of the signals (represented as light and dark strips) and performing quadrature detection.

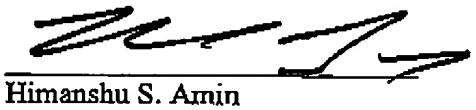
Based on at least the foregoing, Udd, *et al.* does not teach or suggest all limitations of the subject claims. Therefore, this rejection should be withdrawn and the subject claims allowed.

CONCLUSION

The subject application is believed to be in condition for allowance in view of the above comments. A prompt action to such end is earnestly solicited.

A credit card payment form is filed concurrently herewith in connection with all fees due regarding this document. In the event any additional fees may be due and/or are not covered by the credit card, the Commissioner is authorized to charge such fees to Deposit Account No. 50-1063 [ALBRP138US].

Respectfully submitted,
AMIN & TUROCY, LLP



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